

CLAIMS

- 1 1. A first apparatus comprising:
2 a non-volatile memory that contains:
3 (A) bus numbering information for at least one bus located within the first
4 apparatus; and
5 (B) bus numbering information for at least one bus located within a second
6 apparatus coupled to the first apparatus.
- 1 2. The first apparatus of claim 1 wherein the bus numbering information comprises a
2 beginning bus number and a number of buses.
- 1 3. The first apparatus of claim 1 wherein the non-volatile memory comprises at least
2 one identifier for determining if contents of the non-volatile memory are valid.

- 1 4. A computer system comprising:
2 a first physical enclosure;
3 a second physical enclosure coupled to the first physical enclosure, the second
4 physical enclosure including a non-volatile memory that contains bus numbering
5 information for buses contained in the first and second physical enclosures; and
6 a bus number manager that detects a change in configuration of the computer
7 system and that reads the bus numbering information from the non-volatile memory for the
8 first and second physical enclosures to determine an appropriate bus number for at least
9 one bus in the first and second physical enclosures.
- 1 5. The computer system of claim 4 wherein the bus numbering information comprises
2 a beginning bus number and a number of buses.
- 1 6. The computer system of claim 4 wherein the non-volatile memory comprises at
2 least one identifier that is read by the bus number manager to determine if contents of the
3 non-volatile memory are valid.

1 7. A computer system comprising:
2 (1) a first physical enclosure comprising:
3 at least one processor;
4 a memory coupled to the at least one processor;
5 a non-volatile memory coupled to the at least one processor, the non-
6 volatile memory including a bus number mask that indicates bus numbers in use in
7 the computer system; and
8 a hub coupled to the at least one processor;
9 (2) a second physical enclosure comprising:
10 at least one bridge coupled to the hub in the first physical enclosure;
11 at least one numbered bus coupled to the at least one bridge;
12 a non-volatile memory that contains:
13 (A) bus numbering information for numbered buses in the second
14 physical enclosure; and
15 (B) bus numbering information for numbered buses in a third
16 physical enclosure;
17 (3) the third physical enclosure comprising:
18 at least one bridge coupled to the at least one bridge in the second physical
19 enclosure;
20 at least one numbered bus coupled to the at least one bridge in the third
21 physical enclosure;
22 a non-volatile memory that contains:
23 (A) bus numbering information for numbered buses in the third
24 physical enclosure; and
25 (B) bus numbering information for numbered buses in the second
26 physical enclosure;

(claim 7 continued)

27 (4) a bus number manager residing in the memory of the first physical enclosure
28 and executed by the at least one processor in the first physical enclosure, the bus number
29 manager detecting a change in configuration of the computer system and reading the bus
30 numbering information from the non-volatile memory in the second and third physical
31 enclosures to determine an appropriate bus number for at least one bus in the second and
32 third physical enclosures.

1 8. The computer system of claim 7 wherein the bus numbering information comprises
2 a beginning bus number and a number of buses.

1 9. A computer-implemented method for storing bus numbering information in a non-
2 volatile memory, the method comprising the steps of:
3 assigning unique bus numbers to buses in a first physical enclosure;
4 assigning unique bus numbers to buses in a second physical enclosure; and
5 storing the bus numbers for the buses in the first and second physical enclosures in
6 the non-volatile memory.

1 10. The method of claim 9 wherein the non-volatile memory resides in the first
2 physical enclosure.

1 11. The method of claim 9 wherein the bus numbering information comprises a
2 beginning bus number and a number of buses.

- 1 12. A computer-implemented method for numbering a plurality of buses in a computer
2 system that includes a plurality of physical enclosures, the method comprising the steps of:
3 storing in a non-volatile memory bus numbering information for at least one bus in
4 a first physical enclosure;
5 storing in the non-volatile memory bus numbering information for at least one bus
6 in a second physical enclosure;
7 detecting a change in the computer system configuration; and
8 reading the bus numbering information from the non-volatile memory for the first
9 and second physical enclosures to determine an appropriate bus number for at least one
10 bus in the first and second physical enclosures.
- 1 13. The method of claim 12 wherein the bus numbering information comprises a
2 beginning bus number and a number of buses.

- 1 14. A computer-implemented method for assigning and maintaining persistent numbers
2 to a plurality of buses in a computer system that includes a plurality of physical enclosures,
3 the method comprising the steps of:
4 assigning unique bus numbers to buses in a first physical enclosure;
5 assigning unique bus numbers to buses in a second physical enclosure coupled to
6 the first physical enclosure;
7 storing bus numbering information corresponding to the bus numbers for the buses
8 in the first and second physical enclosures in a first non-volatile memory in the first
9 physical enclosure;
10 storing bus numbering information corresponding to the bus numbers for the buses
11 in the first and second physical enclosures in a second non-volatile memory in the second
12 physical enclosure;
13 detecting a change in the computer system configuration;
14 reading the bus numbering information from the first and second non-volatile
15 memories to determine an appropriate bus number for the buses in the first physical
16 enclosure; and
17 reading the bus numbering information from the first and second non-volatile
18 memories to determine an appropriate bus number for the buses in the second physical
19 enclosure.
- 1 15. The method of claim 14 wherein the bus numbering information comprises a
2 beginning bus number and a number of buses.

1 16. A program product comprising:
2 a bus number manager that detects a change in configuration of a computer system
3 that includes a plurality of physical enclosures, the bus number manager reading bus
4 numbering information from a non-volatile memory in a first physical enclosure to
5 determine an appropriate bus number for at least one bus in the first physical enclosure
6 and at least one bus in a second physical enclosure; and
7 computer readable signal bearing media bearing the bus number manager.

1 17. The program product of claim 16 wherein the signal bearing media comprises
2 recordable media.

1 18. The program product of claim 16 wherein the signal bearing media comprises
2 transmission media.

1 19. The program product of claim 16 wherein the bus numbering information
2 comprises a beginning bus number and a number of buses.

1 20. The program product of claim 16 wherein the non-volatile memory comprises at
2 least one identifier that is read by the bus number manager to determine if contents of the
3 non-volatile memory are valid.

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